

ABSTRACT

An electrochemical system includes a reversible fuel cell system which generates electrical energy and reactant product from fuel and oxidizer in a fuel cell mode and which generates the fuel and oxidant from the reactant product and the electrical energy in an electrolysis mode. The system also includes a reactant product delivery device which is adapted to supply the reactant product to the reversible fuel cell system operating in the electrolysis mode, in addition to or instead of the reactant product generated by the reversible fuel cell system in the fuel cell mode, and a fuel removal device which is adapted to remove the fuel generated by the reversible fuel cell system operating in the electrolysis mode from the electrochemical system.